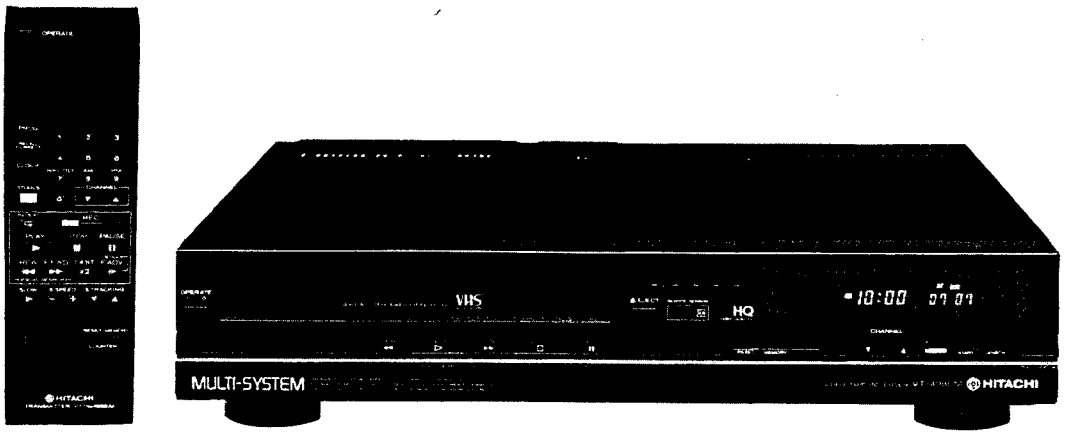
HITACHI VIDEO DECK

VT-498EM



Instruction manual

To obtain the best performance and ensure years of trouble-free use, please read this instruction manual completely.

VHS
PAL SECAM NTSC

FOR YOUR SAFETY

Do not remove panel covers by unscrewing. There are no user serviceable parts inside. Refer all servicing to qualified service personnel.

Mains supply
This VTR can be used with a power (mains) voltage of 100 to 110V, 115 to 127V, 200 to 220V or 230 to 250V.

Be sure to check your local power (mains) voltage. Turn the voltage selector located on the bottom of the VTR to your desired power (mains) voltage with a screwdriver until the selector clicks. Before turning the voltage selector, unplug the main power plug from the AC outlet.

The OPERATE switch located on the front panel of the VTR switches the VTR to on and off, leaving the clock/timer facility unaffected.

As to the indication of the OPERATE switch, "I" shows ON and " ⏻ " shows electrical power stand-by.

If the unit is to be left unattended for a long period and it is not intended to use the timer recording function, it is recommended that the unit be completely switched off and the plug removed. If you intend to record during your absence, remember there is no necessity for the TV receiver to be switched on.

WARNING: It is permissible to record television programmes only in the event that third party copyrights and other rights are not violated.

NOTE: MESECAM (Middle East SECAM or Mid Europe SECAM) is conventional provisional SECAM and the B/G SECAM or D/K SECAM.

HQ **The Video Tape Recorder (VTR) with this marking incorporates VHS high-quality picture technology and is compatible with any Video Tape Recorders bearing the VHS mark.**

FEATURES

Multi-Record/Playback system
It may be more realistically understandable to you how attractive this Video recorder is, if actual capability for recording/playback video signals with this unit are listed up, as follows.

(1) PAL-SP (Standard Play) tapes
(2) PAL-LP (Long Play) tapes
(3) MESECAM-SP tapes
(4) MESECAM-LP tapes
(5) SECAM-SP tapes
(6) NTSC-SP tapes
(7) NTSC-LP tapes (Playback only)
(8) NTSC-EP (Extra Long Play) tapes

In addition to the above, the following 2 features are counted.

(9) 4.43 NTSC/3.58 NTSC compatible for relevant Colour TVs.
(10) B/G-PAL, D/K-PAL, I-PAL, B/G-SECAM, D/K-SECAM and NTSC recording with built-in tuner, & Play with G/I/K/M RF converters

Multi-TV tuners built-in
(1) B/G for B/G-PAL and B/G SECAM reception
(2) D/K for D/K-PAL and D/K SECAM reception
(3) I for I-PAL reception
(4) M for NTSC reception

With VT-498EM, you can tune in to Middle East B/G-SECAM broadcast, American/Japanese NTSC broadcast, European B/G-PAL, English I-PAL, the People's Republic of China D/K-PAL and U.S.S.R D/K-SECAM broadcast for recording to Video tape without additional TV tuner.

8 hours Long Play/Long Recording Compatible
(1) PAL/MESECAM — LP....maximum 8 hours (E240)
(2) PAL/MESECAM — SP....maximum 4 hours (E240)
(3) NTSC — EP.....maximum 8 hours (T160)
(4) NTSC — LP.....maximum 5 hours 20 min (T160) (Playback only)
(5) NTSC — SP.....maximum 2 hours 40 min (T160)
(6) SECAM — SP .....maximum 4 hours (E240)

4 Heads for optimum performance for both SP and LP/EP
2 kinds of width heads are installed to improve picture reproduction both for Standard Play and for Long Play operations.

Recording from video camera
HITACHI video camera (PAL, SECAM or NTSC) can be used for recording with this multi-video recorder and with an optional AC adaptor.

Multi-RF converters built-in
(1) G-position for B/G-PAL/SECAM TV
(2) I-position for I-PAL TV
(3) K-position for D/K-PAL/SECAM TV
(4) Automatic Selection for NTSC TV

Infrared Wireless Remote Control

- The provided LCD timer remote controller lets you programme the VTR's timer up to 8 programmes for 1 year period. In addition to usual VTR operations such as play, stop, pause, etc., you can set and display the clock. When you set the clock and date, its calender timer function shows you the day of the week as far as 99 years ahead.
  Direct channel selection, counter resetting, slow-motion play ..... all from the comfort of your armchair.
- TV-VTR Unified Command Compatible [UC] by TV-VTR Unified Remote Control of HITACHI Colour TV (CMT2110, CMT1910 etc.)

Large Scale Fluorescent Panel for Multi-function Display

(1) Operation functions
(2) Clock/Date/Counter/Channel
(3) Start/End time for Timer Recording, etc.

Unattended (timer) recording

The programmable electronic quartz clock/timer can be preset 1 year in advance to record up to 8 preselected programmes.

79 TV Stations Preset Memory Capability

In most cases, only a certain number of channels are available. For simplified tuning, your area's local TV stations may be programmed into the memory up to 79 stations. Pressing the channel up/down button will advance the tuner directly to the next preprogrammed channel.

New Instant recording timer (New IRT)

Not only recording length is instantly preset, but also now recording start time can be preset.

Automatic Operation

(1) Automatic play
(2) Automatic cassette eject without its tab when recording
(3) Automatic endless play
(4) Automatic repeat playback
(5) Automatic operate on
(6) Rewind Automatic Shut off
(7) Automatic Rewind
(8) Automatic dimmer at operate off
(9) Automatic colour system selector for NTSC/PAL/SECAM
(10) Automatic Tuning system of TV stations
(11) Automatic selection between M and G/I/K of RF converter
(12) Automatic tape speed selector for 5 different recorded tapes at playback mode.

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Moisture condensation

If you pour a cold liquid into a glass, water vapor in the air will condense on the surface of the glass. This is moisture condensation.
Moisture condensation on the head drum, one of the most crucial parts of the VTR, will cause damage to the tape.
The VTR should not be operated for at least 2 hours after being moved from a cold to a hot environment to avoid condensation from occuring on the head drum.

Precautions

- The VTR is designed for use in horizontal position only.
- Allow for air circulation at bottom, top and back of unit.
- Avoid extreme heat, cold, moisture and dust.
- Avoid use near magnetic fields and places subject to strong vibrations.
- Do not insert wires, etc. through the cassette compartment.
- Do not move the unit from a hot place to a cold place or vice versa.
- Be careful; when the surface of the case is wiped with a volatile agent such as benzine, alcohol, thinner, etc., or a chemically processed cloth, the surface finish may deteriorate or its coating may peel.

HOW TO ENJOY THIS MULTI-SYSTEM VIDEO DECK

There are various colour broadcasting systems in different parts of the world. Your TV set can receive TV broadcast in your area, but perhaps cannot receive colour broadcasts in other countries. There are tapes recorded with different colour broadcast systems. Use this unit after fully understanding the following.

- **Broadcast systems that can be recorded with VT-498EM** **Table 1**

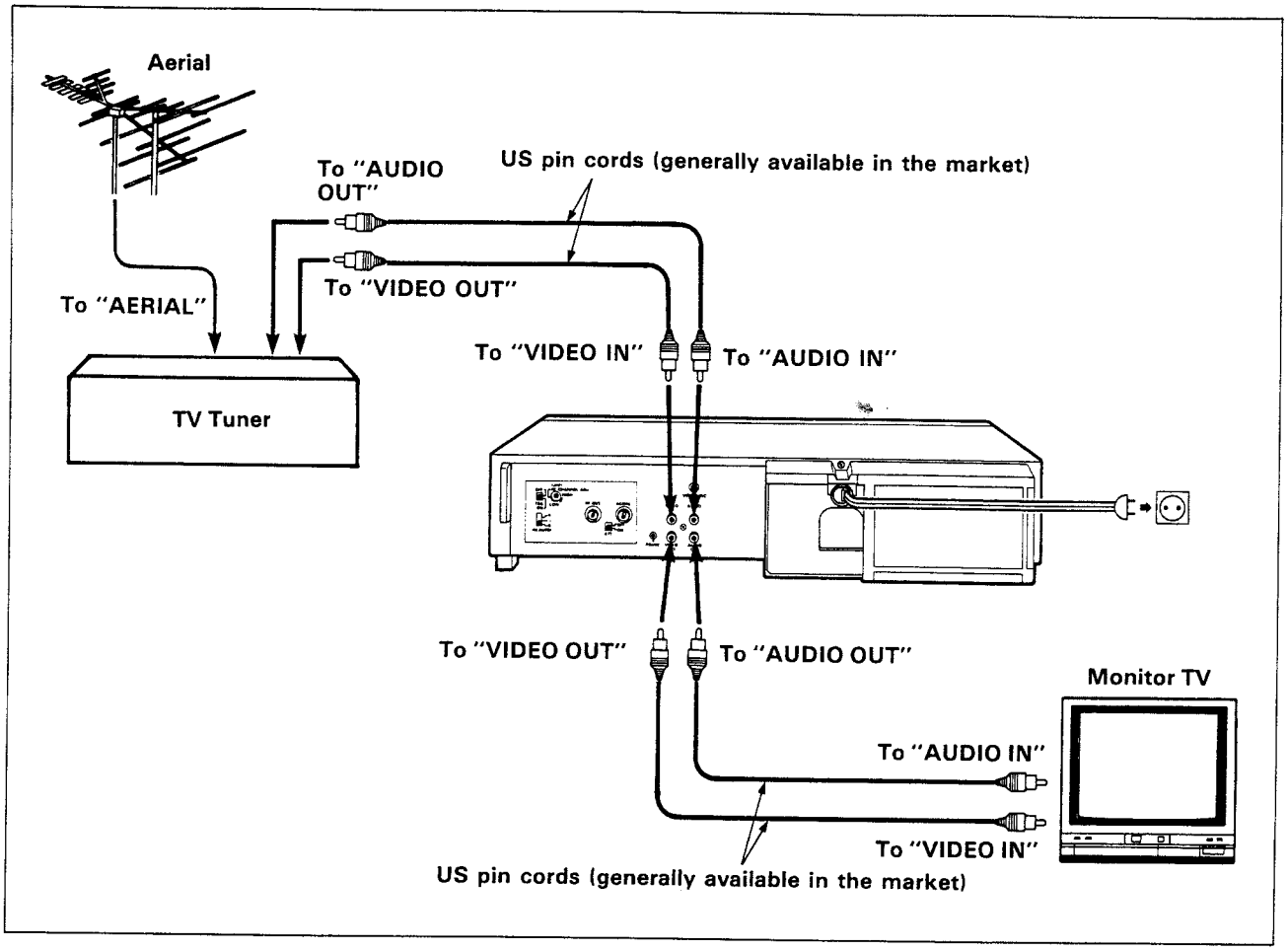
Broadcasting system for colour TV		B/G-PAL	I-PAL	D/K-PAL	B/G-SECAM	D/K-SECAM	L-SECAM	NTSC
Major Counries		Australia West Germany Kuwait India Italy Singapore U.A.E Malaysia	Great Britain Hong Kong	China Mongolia	Saudi Arabia Greece Lebanon Morocco G.D.R Egypt	Bulgaria Ivory U.S.S.R	France	USA Canada Japan Philippines Mexico
VTR Recording mode	PAL-SP	YES	YES	YES				
	PAL-LP	YES	YES	YES				
	MESECAM-SP				YES	YES		
	MESECAM-LP				YES	YES		
	SECAM-SP				YES	YES	*1 (YES)	
	NTSC-SP							YES
	NTSC-LP							
	NTSC-EP							YES

*1 SECAM recording from VIDEO IN jack is possible, howeverr, L-SECAM TV tuner is not built-in, therefore extra separate TV tuner is required.

*2 Suffixes "-SP", "-LP" and "-EP" mean the tape speeds of recorded tapes.

*3 In addition to the above recording NTSC 4.43 for VTR recording is possiblle only for dubbing purpose from NTSC 4.43 signal from other VTR.

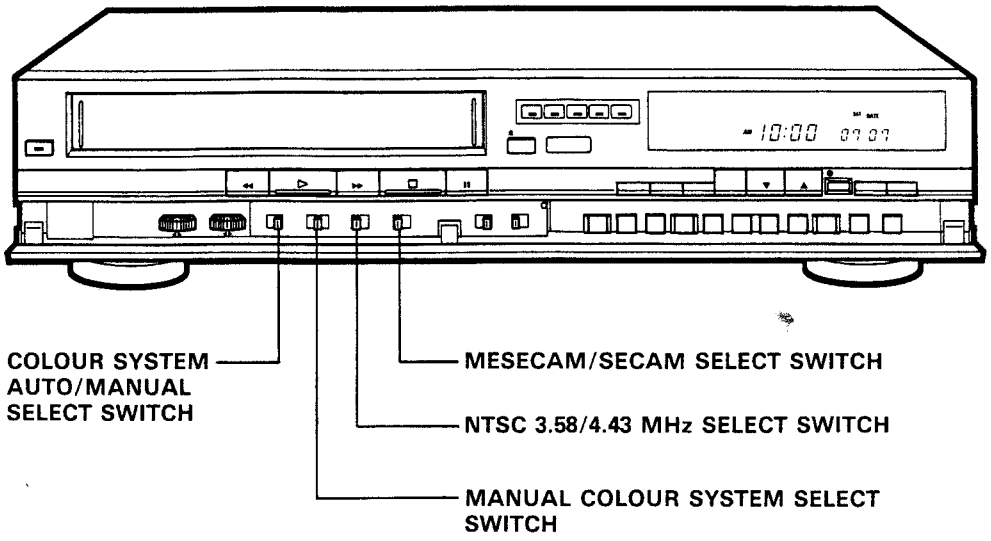
Type 3 When combined with a SECAM (System L) TV tuner and monitor TV.



Notes: • When recording a SECAM (System L) signal, a TV tuner and monitor TV will have to be bought separately. They are not available from Hitachi.
• Playback of a SECAM (System L) recorded tape is possible when the unit is connected to a MESECAM (System B&G) TV as in Type 1 as well as with the above connection.

Before operating

To enjoy the multi-system video deck, you must change over the system switches as follows.


COLOUR SYSTEM AUTO/MANUAL SELECT SWITCH
MESECAM/SECAM SELECT SWITCH
NTSC 3.58/4.43 MHz SELECT SWITCH
MANUAL COLOUR SYSTEM SELECT SWITCH

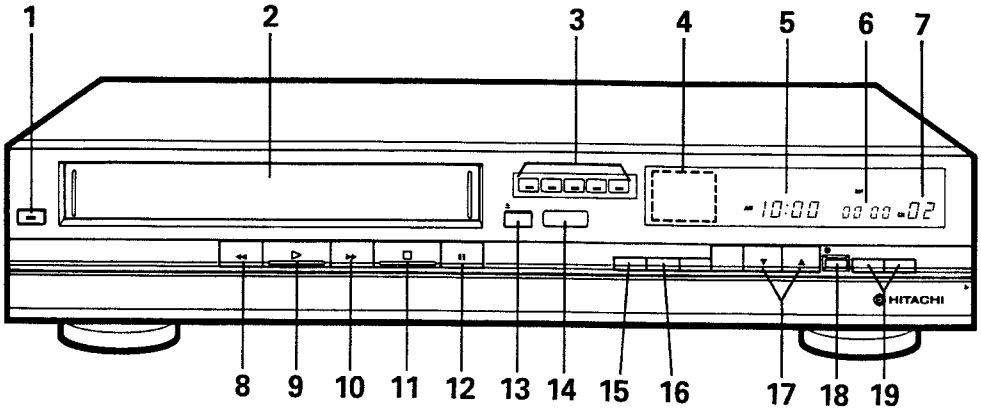
■ Recording

TV Broadcast System	Position of Switches				Record Signal on the tape
	COLOUR SYSTEM AUTO/MANUAL SELECT SWITCH	MANUAL COLOUR SYSTEM SELECT SWITCH	NTSC 3.58/4.43 MHz SELECT SWITCH	MESECAM/SECAM SELECT SWITCH	
PAL	AUTO	–	–	–	PAL
	MANUAL	PAL	–	–	
SECAM	AUTO	–	–	MESECAM	MESECAM
				SECAM	SECAM
	MANUAL	MESECAM/SECAM	–	MESECAM	MESECAM
				SECAM	SECAM
NTSC	AUTO	–	3.58	–	NTSC
	MANUAL	NTSC	3.58	–	NTSC

■ Playback

Recorded Signal on the tape	Position of Switches				Playback Signal
	COLOUR SYSTEM AUTO/MANUAL SELECT SWITCH	MANUAL COLOUR SYSTEM SELECT SWITCH	NTSC 3.58/4.43 MHz SELECT SWITCH	MESECAM/SECAM SELECT SWITCH	
PAL	AUTO	–	–	–	PAL
	MANUAL	PAL			
MESECAM	AUTO	–	–	MESECAM	SECAM
	MANUAL	MESECAM/SECAM			
SECAM	AUTO	–	–	SECAM	SECAM
	MANUAL	SECAM			
NTSC	AUTO	–	3.58	–	NTSC 3.58
			4.43		NTSC 4.43
	MANUAL	NTSC	3.58	–	NTSC 3.58
			4.43		NTSC 4.43

CONTROLS AND FUNCTIONS



1. **OPERATE SWITCH**
   Turn system power on and off.

2. **CASSETTE COMPARTMENT**
   Insert a cassette through the door, and loading will be completed automatically.
   Note: Power is turned on automatically when the cassette is loaded.

3. **COLOUR MODE INDICATORS**
   Indicates the mode corresponding to the colour mode which is being recorded or played back.

4. **MODE INDICATORS**
   - "[cassette]" appears when a cassette is in the compartment.
   - "PLAY" appears during the playback mode.
   - "REC" appears during the record mode.
   - "◀◀" appears during the rewind mode and flashes during rewind visual search mode.
   - "▶▶" appears during the fast forward mode and flashes during forward visual search mode.
   - "❚❚" appears during the play/record pause mode.
   - "[clock]" appears when turning the power off after programming the timer.

5. **DIGITAL TIMER DISPLAY**
   This normally shows the time and day of the week.

6. **DIGITAL DATE/COUNTER DISPLAY**
   This shows the current date when the VTR power is turned off or shows the tape counter when the VTR power is turned on.

7. **CHANNEL INDICATOR DISPLAY**
   This shows the channel number corresponding to the channel selected.

8. **REWIND/VISUAL SEARCH BUTTON**
   Press to start rewind.
   Press this button during playback and reverse playback picture at high speed can be seen.

9. **PLAY BUTTON**

10. **FAST FORWARD/VISUAL SEARCH BUTTON**
    Press to activate fast forward.
    Press this button during playback and forward playback picture at high speed can be seen.

11. **STOP BUTTON**
    The STOP button must be pressed between "RECORD" and any other operation.

12. **PAUSE BUTTON**
    Press to pause during recording.
    Press to view a still picture during playback.
    Press again to release.

13. **EJECT BUTTON**
    Press to remove cassette.

14. **INFRARED RAY RECEIVING SECTION**
    Receives infrared rays from remote control unit.

15. **COUNTER RESET BUTTON**
    To reset counter to "0000".

16. **MEMORY BUTTON**
    Press this button so "M" is indicated in the display, then fast forward or rewind the tape. The tape stops when the counter reaches approximately "0000".
    Note: Press the button again to switch off the "M" indicator.

17. **CHANNEL SELECT BUTTONS**
    Select the channels you wish to view or record by pressing these buttons.
    And you can also select the "AU" position* by pressing this button to record or watch the programme input at the VIDEO IN/AUDIO IN jacks.
    * One channel position either higher or lower outside the range of your preset channels.

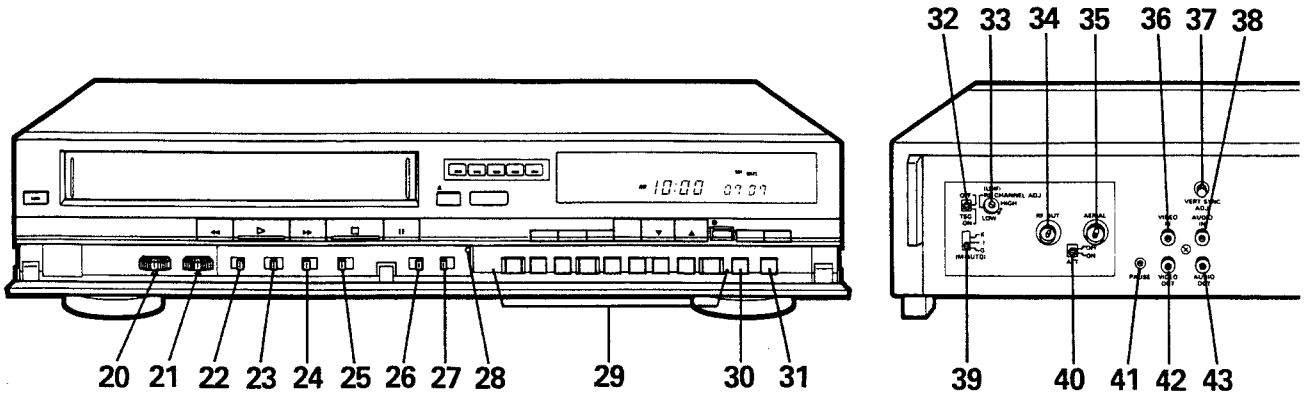
18. **RECORD BUTTON**
    Press RECORD button to record.

19. **INSTANT RECORDING TIMER BUTTONS (IRT)**
    This allows unattended recording.
    Timer will switch the VTR off automatically at a preselected time. This is convenient when you go out during recording.

20. **PICTURE CONTROL**
    Adjust the picture so it is easy to see.

21. **TRACKING CONTROL**
    To minimize noise in playback.

22. **COLOUR SYSTEM AUTO/MANUAL SELECT SWITCH**
    This switch is used to select colour systems either automatically or manually.
    AUTO: Set to this position ordinarily. Circuits are automatically switched to either PAL, MESECAM/SECAM or NTSC.



MANUAL: If a normal picture does not appear (wrong colour system is judged due to the poor picture, picture disturbed or colour unstable, etc.) when recording or playback is performed with this switch set to AUTO, set it to MANUAL and select the Manual colour system select switch (23) to the adequate colour system so that the normal picture may appear.

23. MANUAL COLOUR SYSTEM SELECT SWITCH
After setting the Colour system AUTO/MANUAL select switch (22) to "MANUAL", change over this switch for relevant colour system position either PAL or MESECAM/SECAM and or NTSC. It is not effective to change over this switch when the Colour system AUTO/MANUAL select switch is set to "AUTO".

24. NTSC 4.43/3.58 MHz SELECT SWITCH
This switch is effective when the Manual colour system select switch (23) is set to "NTSC".
4.43: Set the switch to this position when connect the Multi-colour TV which does not have NTSC 3.58 but only 4.43.
3.58: Set the switch to this position normally in an NTSC area.

25. MESECAM/SECAM SELECT SWITCH
Make selections with this switch when recording a SECAM broadcast or playing a tape on which a SECAM or MESECAM signal is recorded.

26. BUZZER SWITCH
When this switch is on, a beep sound will be heard when any VTR operation button is pressed. This is a convenience in operation.
To stop this function, turn the switch off.

27. EDIT SWITCH
Turn this switch on when using this VTR for playback during dubbing. The dubbed tape will provide clearer pictures. This function does not work when using this VTR for recording.

28. RESET SWITCH
Press this switch if the digital display malfunctions or no operation mode can be engaged to reset the display. Set the clock to the correct present time.

29. CLOCK/TIMER/CHANNEL PRESET BUTTONS

30. REC SPEED SELECT SWITCH
Select standard play (SP) or long play (LP). Letters "LP" appears in the display when the LP speed is selected. Nothing is displayed when the SP speed is selected. Only use this switch when recording. Playback speed automatically corresponds with recording speed. Refer to page 13 for details.

31. SIMULCAST SWITCH
Allows you to record audio signal from AUDIO IN jack and video signal from built-in tuner. The SC indicator appears in the display when this switch is turned on.

32. TSG ON/OFF SWITCH
Set to ON and check that the video channel of your TV set is correct. After checking, set this switch to OFF.

33. RF CHANNEL CONTROL
Turn TSG ON/OFF switch to "ON" and rotate this control to set the video channel correctly.

34. RF OUTPUT
Connect to TV aerial input.

35. AERIAL INPUT SOCKET
Connect external aerial.

36. VIDEO IN
Receives video signals from a camera, or another VTR.

37. VERTICAL SYNC. ADJUSTMENT CONTROL
If you see vertical shaking on the TV screen in the still playback mode, rotate this control to minimize shaking.

38. AUDIO IN
Receives audio signals from a camera, external sound equipment or from another VTR.

39. G/I/K SELECT SWITCH
Set this switch correctly according to the TV set connected to this video deck.

40. ATTENUATOR SWITCH
Generally set to the OFF position.
Set to the ON position when interference occurs in an area with a strong signal.

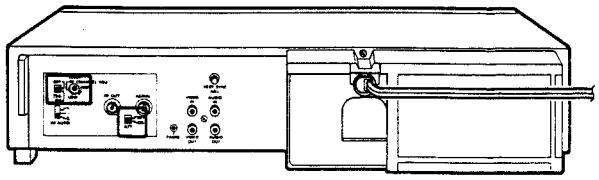
41. CAMERA PAUSE JACK
Connect Camera pause cable.

42. VIDEO OUT
Permits video connection of your unit to a monitor or another VTR.

43. AUDIO OUT
Permits audio connection of your unit to a monitor or another VTR.

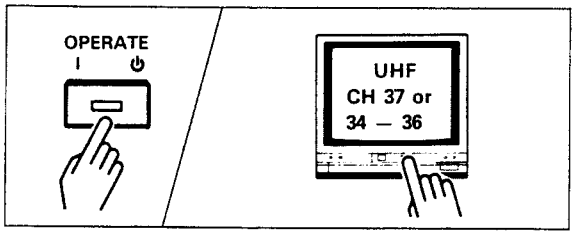
VIDEO CHANNEL SETTING

The RF converter changes the video and audio signals played back from the video tape to the same type of signals used for TV broadcasts. The RF converter output of this unit is set to UHF channel 37 for PAL/SECAM system TV receivers (UHF channel 34 — 36 for NTSC system TV receivers) prior to shipment. If this channel is employed for broadcasting, the converter channel must be reset to a vacant channel between CH30 — CH39 for PAL/SECAM systems (CH25 — CH38 for NTSC system).

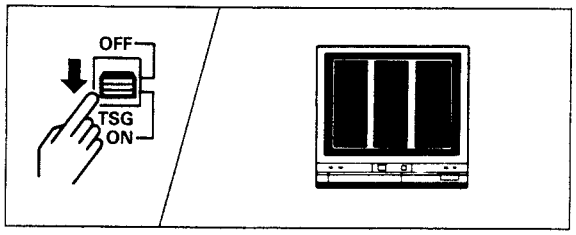


User's controls

1 Turn on VTR and TV, then set TV to UHF channel 37 for the PAL/SECAM systems (channel 34 — 36 for the NTSC system).
If this channel is employed for broadcasting, select a vacant channel (CH30 — CH39 for the PAL/SECAM systems, CH25 — CH38 for the NTSC system).

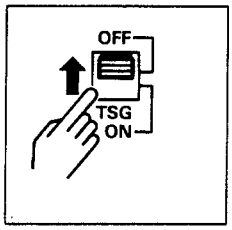


2 Set the TSG ON/OFF switch to ON.

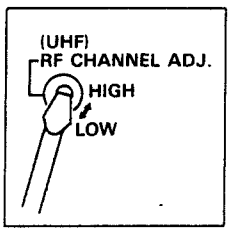


The test pattern appears on the TV screen.
Fine tune your TV until the test pattern is received clearly.

3 After completing adjustment, set the TSG ON/OFF switch to OFF.



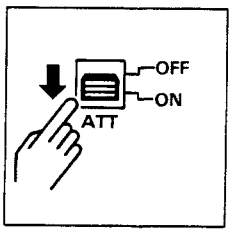
NOTE:
If it is not possible to correctly tune to the test pattern, adjust the RF converter output with the RF channel control using a small screwdriver and readjust your TV until the test pattern is observed.
For a higher channel numbers, turn counterclockwise.
For a lower channel, turn clockwise.



When connecting the VTR to a TV set provided with auto-tuning and the video channel cannot be set, operate as follows:

1. Remove the aerial cable from the AERIAL terminal of the VTR.
2. Leave the TSG ON/OFF switch "OFF".
3. Play back a blank tape.
4. Press the PAUSE button to obtain the pause mode.
5. Press the Auto-tuning button of the TV.
6. Auto-tuning starts and it stops at video channel.
   Note: The auto-tuning indicator of the TV set changes to an exact tuning indicator.
7. Set the channel memory of the TV to ON and store the channel which was set in item 6.
8. Set the TSG ON/OFF switch to "ON" and check that the picture appears on the TV screen.
   Now, the video channel of the TV has been set properly.
9. Return the TSG ON/OFF switch to "OFF".
10. Reconnect the aerial cable to the VTR.

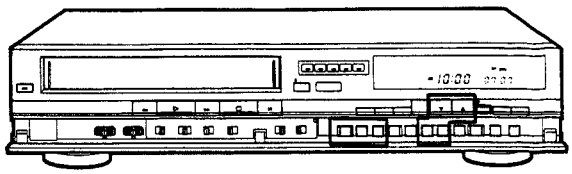
ATTENUATOR SWITCH



The ATTENUATOR switch located on the rear panel of the VTR is used to adjust the reception of the signal from the tuner section.
If the image develops wavy lines during the reception for a broadcast from a local TV station, it may be that the signal reception is too strong.
In this case, set this switch to ON to attenuate the intensity of the signal.
Normally leave this switch in the OFF position.

PRE-TUNING OF BUILT-IN TV TUNER

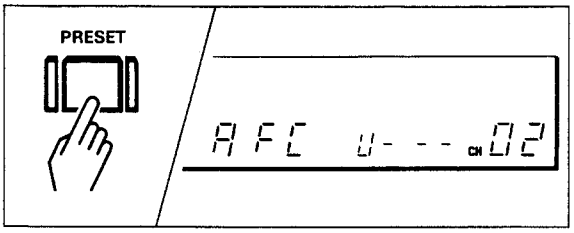
This VTR incorporates a complete television tuner with the required tuning controls. Once you have pre-tuned to preferred stations, you can select any of them by merely pressing the CHANNEL select button.



User's controls

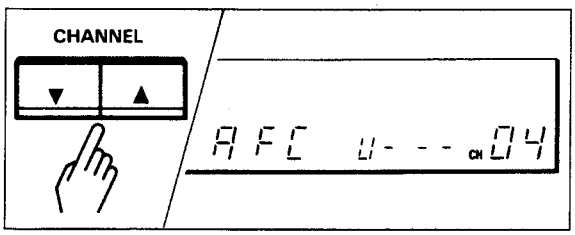
1 Turn on the VTR and the TV, then set the TV to the pre-tuned video channel.

2 Press the PRESET button once.



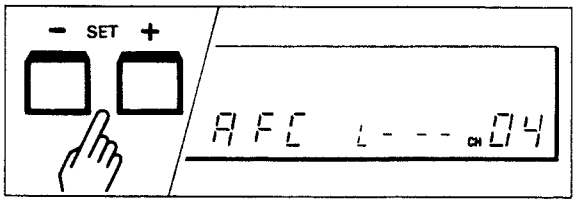
The display indication changes from the clock time display to the band indicator display.
Note: Pressing the button twice will lock the display. If you have pressed it twice, press it once more.

3 Press the CHANNEL select button on the VTR to select the channel to be memorized.



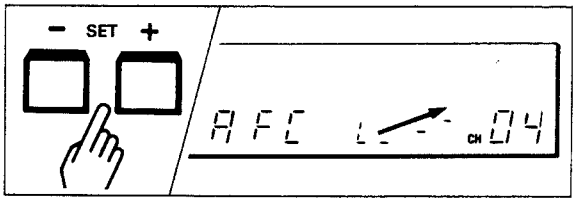
For example, the above diagram shows that channel 4 has been selected.
Notes:
1. The Channel Number Display can be now consecutively selected from "00" through "73" and then "95" through "99" and "AU" by pressing the CHANNEL select button either upward or downward. In this case, the Channel Number may be any number.
2. When "AFC" is not indicated in the display, press AFC OFF button to display "AFC".

4 Press the Reverse SET (—) button to select the desired band to be pre-tuned.
If you pre-tune to VHF low channels, select the indication "L". Select "H" for VHF high channels. Select "U" for UHF channels.
Refer to "CHANNEL RECEIVED" on the back page for complete information.



For example, the above diagram shows that VHF Low band "L" has been selected.

5 Press and release the Forward SET (+) button to start tuning.



The built-in tuner starts searching from the lowest to highest frequencies, and "—" appears in sequence in the direction of the arrow during searching.
At a station that is broadcasting, the picture appears on the TV screen. If the station received is different from the channel to be preset, press Forward SET button again.
At the next station, the searching will stop and the new station can be preset. Repeat this until the desired station is reached.

6 Follow the same steps as explained in steps 3 through 5 above for other channels.
You can preset up to 79 channels in memory.

7 After having completed tuning all channel memories you want, press the PRESET button once again.

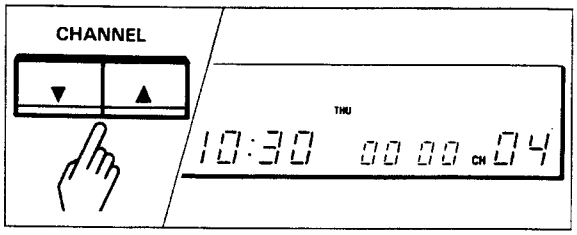
These channels preset in memory as shown in the above can be selected by the CHANNEL select buttons on the VTR.

AFC (Automatic Frequency Control)

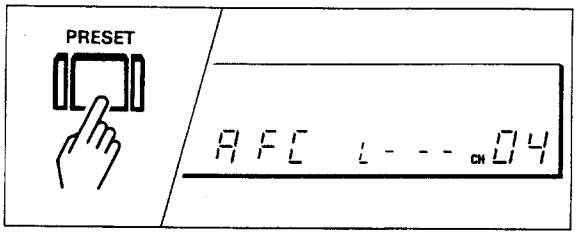
Since this unit has an AFC circuit, when a channel is preset following the above procedure, the AFC turns on automatically and you can receive the signal in optimum condition.

If a TV channel signal is marginal due to graininess or ghosting, the picture may sometimes be improved by manually tuning for best picture and then defeating the AFC action. To turn AFC off, follow the procedure below.

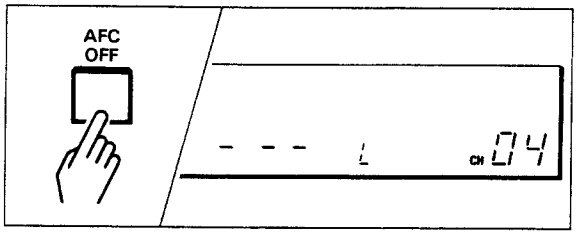
1 Select the desired channel by pressing the CHANNEL select button.



2 Press the PRESET button once.

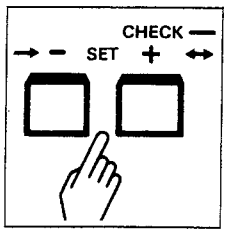


3 Press the AFC OFF button. "AFC" disappears from the display.

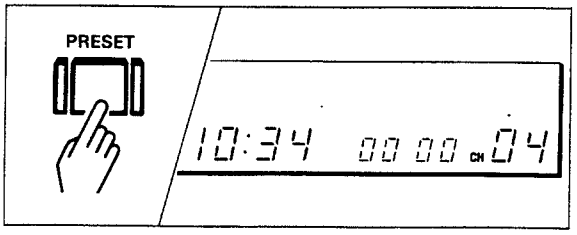


Note: Pressing the button once again will turn the AFC on.

4 Tap on the SET button (Forward or Reverse) alternately for fine tuning.

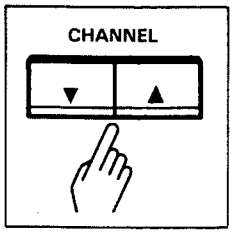


5 Press the PRESET button once again.



Channel selection

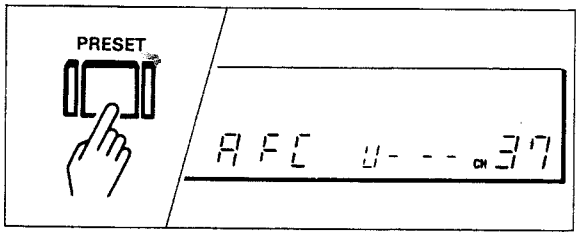
The channel up and down controls on the VTR permit advancing the tuner directly to the next higher or lower programmed channel.



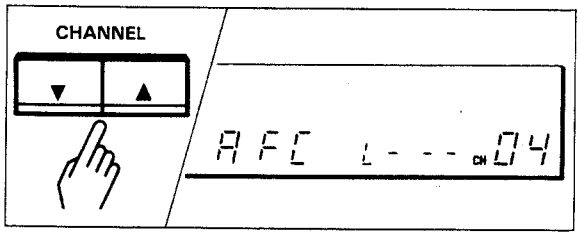
Eliminating unwanted preset channels

You can rearrange the desired channels by eliminating unwanted preset channels for channel up/down tuning.

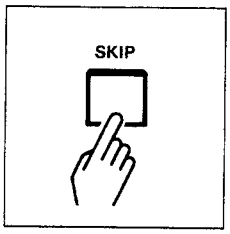
1 Press the PRESET button once.



2 Press the CHANNEL select buttons until an unwanted channel is found.



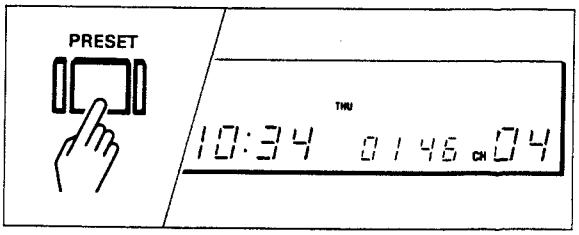
3 Press the SKIP button once.



Sound will go off indicating the channel has been erased from memory.

4 Repeat steps 2 and 3 until all unwanted channels have been erased.

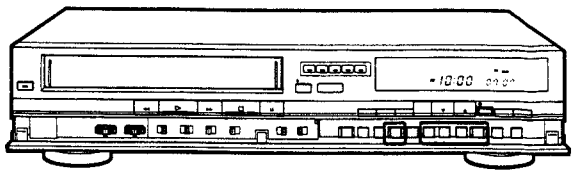
5 After eliminating them, press the PRESET button once again.



Note: To restore the erased channel, repeat the above steps.

CLOCK TIME SETTING

The built-in digital clock is based on a 12-hour cycle and gives you a constant readout of the time and day.

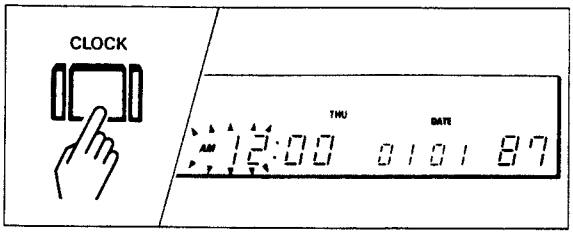


User's controls

The clock time can also be set with the remote control unit provided. See page 23 for operating procedure.

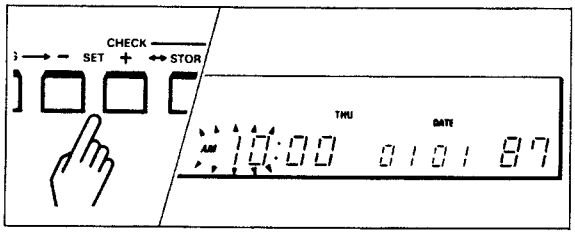
- When the MAINS lead is plugged in for the first time, "–:– –" and "DATE – – – –" will appear in the display.

1 Press the CLOCK button.



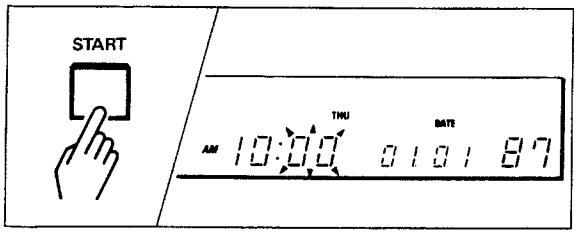
"AM 12" hour starts flashing.

2 Press the SET button (Forward or Reverse) to set the present hour.



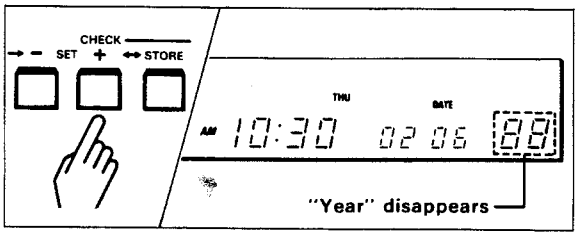
Hold the button down to advance rapidly.

3 Press the STORE button when the present hour appears.
"00" minutes starts flashing.



For example, the diagram shows that "AM 10" hours have been set.

4 Repeat steps 2 and 3 to set minute, day, month and year.



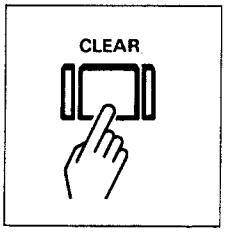
The day of week appears automatically after the year has been entered.
The year disappears from the display when the STORE button is pressed.

For example, the diagram shows that AM 10:30 THU, 2 of June 1988 have been set.

Now the clock has been set to the correct time and date.

To correct an error during setting

You can correct an error in the setting any time before the last step by pressing the CLEAR button repeatedly until the digit to be corrected is flashing. Then enter the correct digit and continue the setting sequence.



Notes:

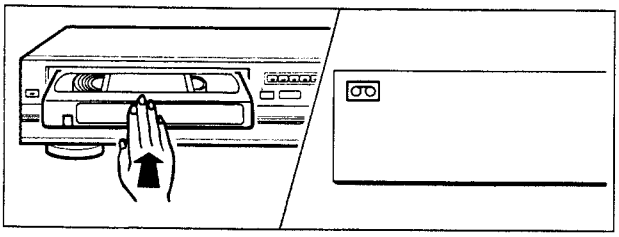
- This VTR has a built-in power failure compensation circuit. If a power interruption of less than 15 minutes occurs, the clock time will not be lost.
- The digital display is bright when the OPERATE switch is turned ON and automatically becomes dim when the switch is off.

CASSETTE TAPES

Use video cassette with the mark in this VTR.

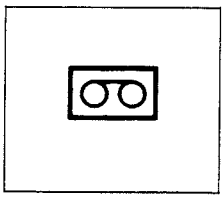
Insertion

Push the cassette through the door until the VTR mechanism pulls it into the compartment.



VTR power automatically turns on and the TAPE-IN indicator turns on when the cassette is in place.

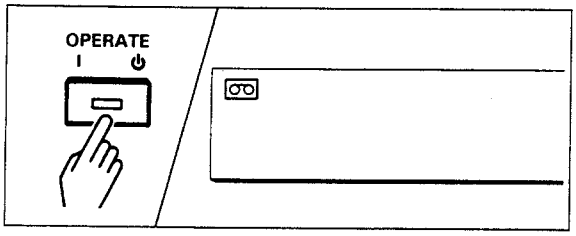
TAPE-IN indicator



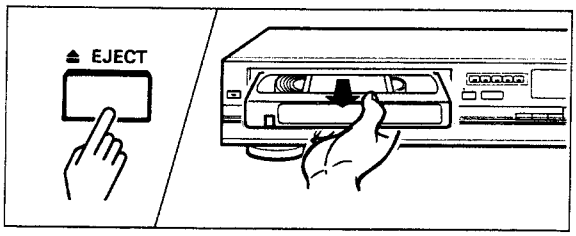
- Will light when the cassette is in the VTR regardless of turning the OPERATE switch on and off.
- Will flash for approx. 5 seconds to warn you to insert a cassette when the OPERATE switch is turned on or the RECORD or PLAY button is pressed if the cassette is not in the VTR.

Removal

1 Turn the OPERATE switch on.



2 Press the EJECT button.

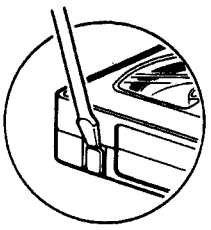


The cassette will come partially out of the compartment so you can pull it out.

- The TAPE-IN indicator turns off when the cassett is ejected.

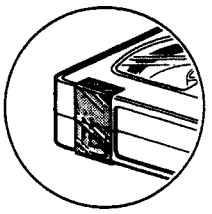
To avoid erasing a recording

Break off the safety tab using a screwdriver or similar tool



To re-record on a cassette which has its safety tab removed

Cover the hole with cellophane tape



Remember that:

- The VTR automatically enters the playback mode when a cassette without a safety tab is inserted.
- The VTR automatically ejects the cassette if the RECORD button is pressed when a cassette without a safety tab is in the VTR.
- Be sure to check its safety tab before inserting a cassette for the above reasons.

Types of video cassette

The table below shows how to distinguish difference in recording time of cassettes.

- **PAL & MESECAM Tapes (SP only for SECAM)**

TYPES	POSITION OF SPEED SELECT SWITCH	
	SP	LP
E-30	30 minutes	60 minutes
E-60	60 minutes	120 minutes
E-120	120 minutes	240 minutes
E-180	180 minutes	360 minutes
E-240	240 minutes	480 minutes

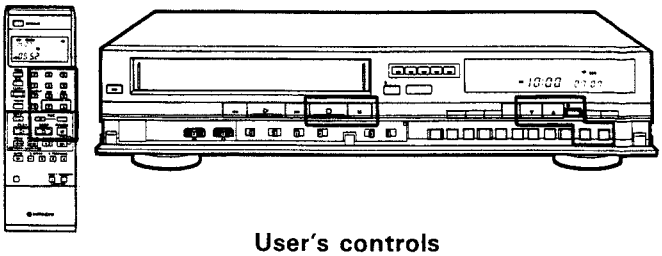
- **NTSC Tapes**

TYPES	POSITION OF SPEED SELECT SWITCH	
	SP	LP (EP)
T-30	30 minutes	90 minutes
T-60	60 minutes	180 minutes
T-120	120 minutes	360 minutes
T-160	160 minutes	480 minutes

NOTES:

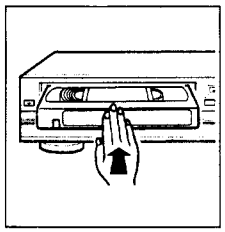
- Change over the REC SPEED select switch only during recording. It is set to the speed used for recording automatically during play, so it is not required to change over it.
- It is recommended to record in the SP mode for tapes with higher quality picture and sound.
- The display indicates only "LP". When displaying "LP" and recording an NTSC signal, the tape is recorded in the EP mode. This VTR cannot record an NTSC signal in the LP mode, however, it can play a tape recorded in the LP mode.

RECORDING TV PROGRAMMES

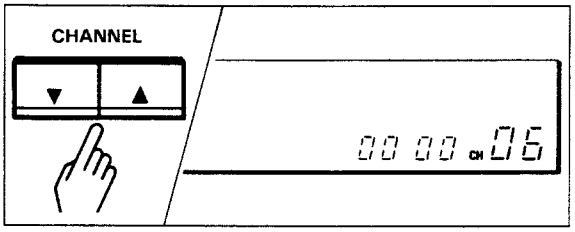


User's controls

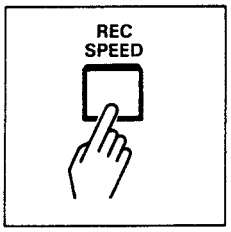
1 Insert a cassette.
Note: Be sure to check that the erase prevention tab is not missing. If it is removed, the VTR goes into playback mode automatically.



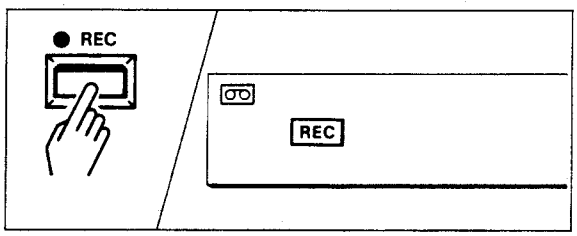
2 Select the channel to be recorded by pressing the CHANNEL select buttons.



3 Set the REC SPEED select switch to "SP" or "LP". It is recommended to set this switch to "SP" to obtain the best picture and sound.

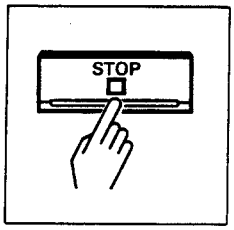


4 Press the RECORD button.



Now, recording starts.

5 After finishing recording press the STOP button.



To view same programme while recording

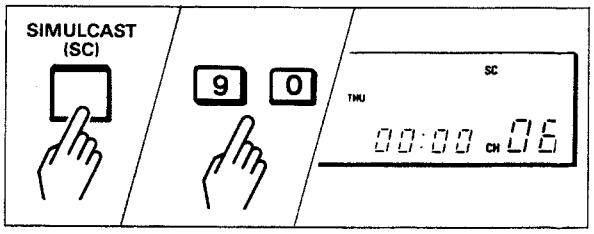
You can view same programme while recording by merely selecting the video channel (described on page 9) with your TV channel button.

To record one programme while viewing another

You can record one programme while viewing another by merely selecting the channel you want to view with your TV channel button. The recorded programme can be viewed later at your convenience.

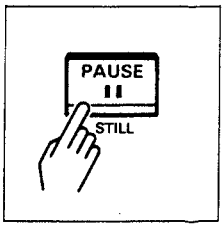
To record video from the built-in tuner and audio from the external sound equipment

Press the SIMULCAST switch in the secondary control door or press the buttons [9] and [0] on the remote control unit. The "SC" indicator will appear in the display. Under this condition, the VTR will record the video from the built-in tuner and audio from the AUDIO IN jack.



Notes:

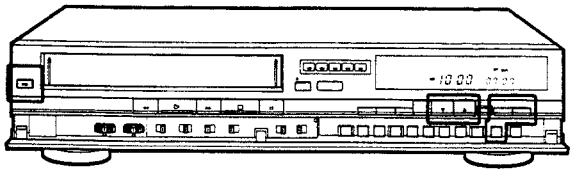
1. If you wish to avoid recording unwanted material, press the PAUSE button. Press the PAUSE button again to release the pause mode. To prevent tape damage, do not leave the unit in the pause mode for more than 5 minutes.



2. If you want to change channels while in the record mode, press the PAUSE button then select the desired channel.
   Press the PAUSE button to release the pause mode.
3. If the cassette in the VTR has its safety tab removed, the VTR will eject it when the RECORD button is pressed.
4. Your TV does not have to be on to make a recording because the VTR records TV programmes without the aid of your TV. Its only use is for monitoring.

INSTANT RECORDING TIMER (IRT)

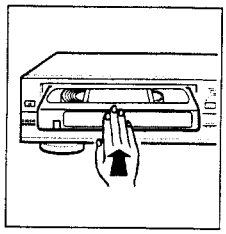
Instant Recording Timer allows you to make simplified timer recording without using the programme timer. There are two simplified methods as explained below.



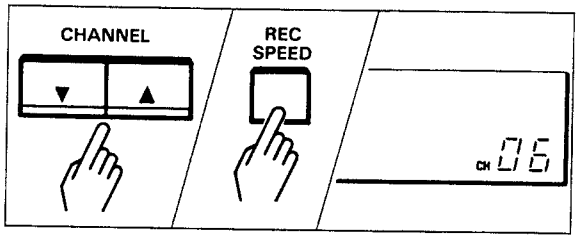
User's controls

FOR IMMEDIATE RECORDING

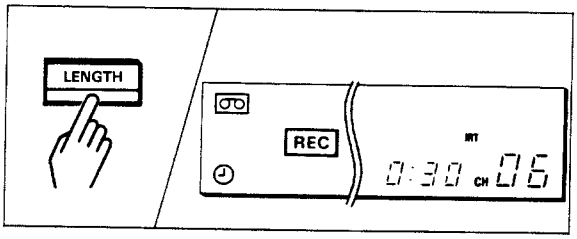
1 Insert the cassette (one with an intact erase prevention tab) into the cassette compartment.



2 Press the CHANNEL select button to select the channel to be recorded then select the tape speed. It is recommended to set this switch to "SP" to obtain the best picture and sound.



3 Press the LENGTH button to set the timer to "0:00". Then press LENGTH once again to indicate the recording time on the display.



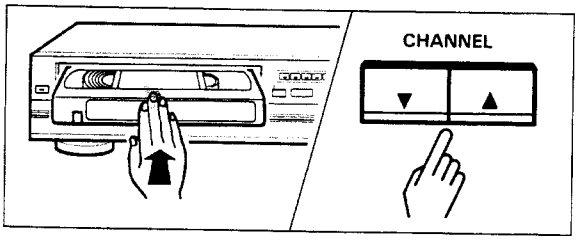
The time changes in hours and minutes in the order of 0:30, 1:00, 1:30, 2:00, 3:00, and 4:00 every time the button is pressed. Recording starts when 0:30 is displayed. During recording, the remaining time is displayed.

4 At the end of recording the display reads 0:00; the VTR will automatically stop recording.

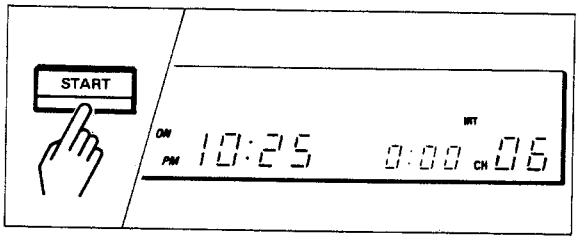
Note: The IRT feature does not operate during play and after a programme timer recording has started. During rewind mode, the IRT recording will automatically start after the tape is rewound fully to the end.

FOR SIMPLIFIED TIMER RECORDING

1 First perform Steps 1 and 2 of "FOR IMMEDIATE RECORDING".

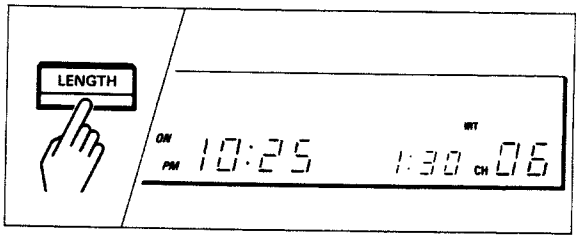


2 Press the START button to select the start time.



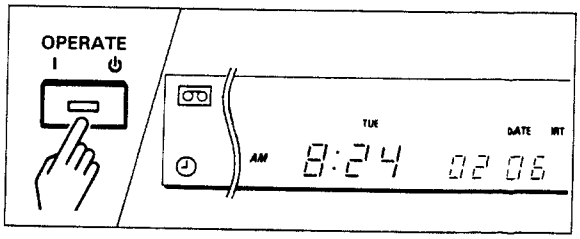
Holding the button down will increment the start time in 10-minute steps. Each time it is pressed will increment the start time by 1 minute.

3 Press the LENGTH button for the recording time.



The counter display is reset to hours and minutes in the order of 0:00, 0:30, 1:00, 1:30, 2:00, 3:00 and 4:00 every time the button is pressed.

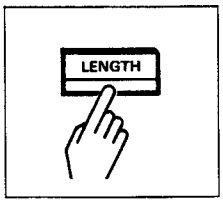
4 Press the OPERATE switch off.



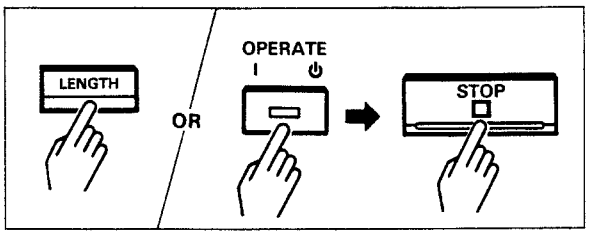
The "⏲" indication will appear on the Display. The recording will start at the time you have selected and will automatically stop when the recording time display reads "0:00".

Notes:

1. The recording time can be extended any time during IRT by pressing the LENGTH button. The recording time display will be reset to 0:30, 1:00, 1:30, 2:00, 3:00 or 4:00 as selected.



2. To stop the VTR during IRT, press the LENGTH button until the recording time display reads 0:00, or press the OPERATE switch then the STOP button within ten seconds.

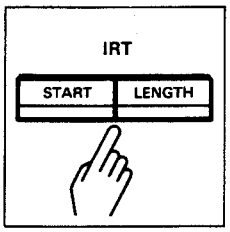


3. To change the IRT programme, the previous information must be first cleared.
4. If the IRT and the programme timer recording overlap, the former will override the latter.

To recall the IRT programme

Press the START or the LENGTH button to recall the start time and the recording time. In about 8 seconds the displays return to the present time of the day.

Note: To recall the start time or the recording time, press the LENGTH button only once.



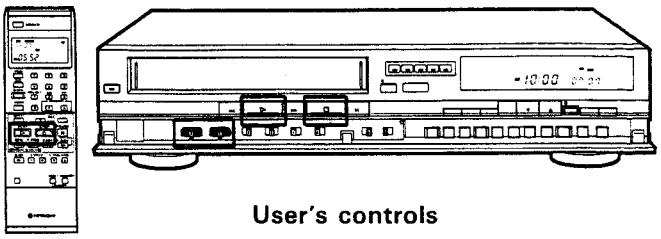
Pressing more will change the recording time and cause a need for resetting.

To cancel IRT programme

Press the LENGTH button as many as may be required to indicate "0:00" on the display. After approximately 8 seconds the display will return to the present time of day, and the IRT has been now cleared.

Note: The OPERATE switch may be on or off.

PLAYBACK

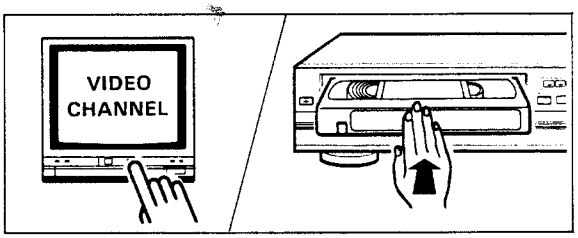


User's controls

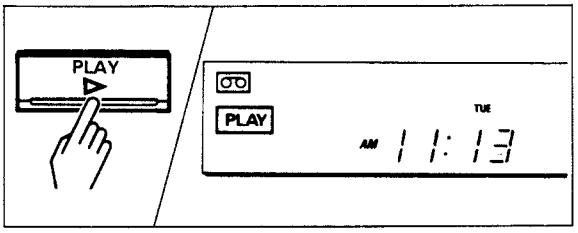
1 Turn the TV set on and select the video channel.

2 Insert the cassette.

Note: When the cassette (with erase prevention tab removed) is loaded, playback starts automatically.

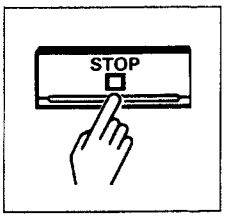


3 Press the PLAY button.



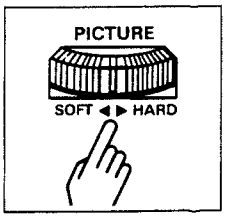
Note: When no color appears during playback of a tape on which a MESECAM signal is recorded in the LP mode, adjust the TRACKING control knob to obtain the color.

4 Press the STOP button to stop playback.



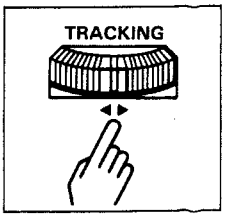
Picture control adjustment

Control the picture as you like (soft or hard).

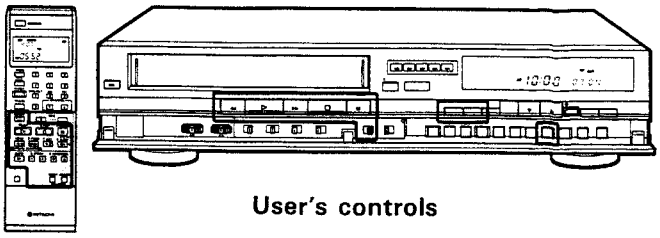


Tracking control adjustment

When playing prerecorded tapes or those recorded on units other than your own, black and white streaks may appear on your TV screen. If this occurs, adjust the TRACKING control until the streaks disappear. When playback of this particular tape is over, readjust the TRACKING control to its original position. The original position is normally in the center position.



SPECIAL CHARACTERISTICS

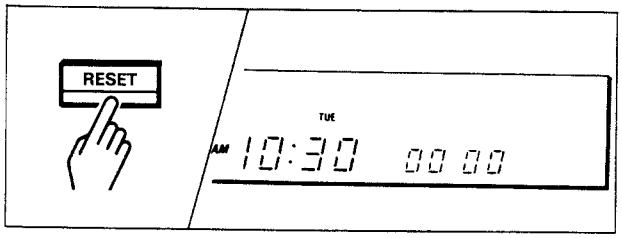


User's controls

Tape counter

This indicates the amount of video tape transported as a number.

Press the RESET button to set the counter reading to "0000" when starting recording or playing back.

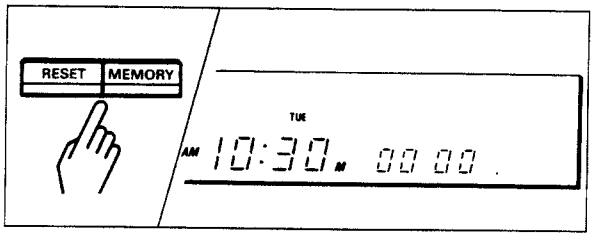


Note the number on the Tape counter at the beginning and end of each programme you record. This will allow you to use the counter to find the desired programme later.

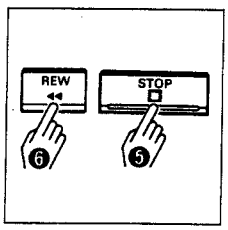
Counter memory function

This is useful if there is a section of tape you want to view immediately after recording or if you want to return to the same point several times.

1. Begin recording or playing back a tape.
2. At the point where you want playback to begin, reset the tape counter to "0000" by pressing the RESET button.
3. Press the MEMORY button, and the "M" appears in the display.



4. Continue to play or record.
5. Press the STOP button when recording or playback finishes.
6. Press the REWIND button.



The tape will automatically stop at the pre-selected "0000" position.

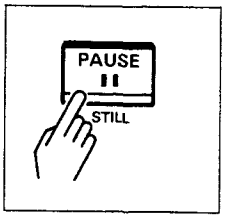
Actually, so that you won't miss the very first part of the programme to be viewed, the tape will stop slightly prior to "0000" at approximately the "9997" position.

Note: The counter memory function will also operate during the fast-forwarding mode.

Still playback

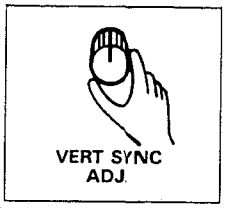
Press the PAUSE button to stop the picture on the screen during playback.

During still playback, press the PAUSE button to return to normal playback or the STOP button to stop the tape.



Notes:

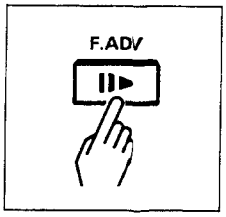
- If you see vertical shaking on the TV screen in the still playback mode, rotate the VERT. SYNC. ADJ. control on the back of VTR to minimize shaking.



- When the still playback mode continues for about 5 minutes, the VTR switches to the stop mode automatically to prevent damage to the tape.
- The playback picture will have some noise in the still playback mode.
- When playing a tape on which a PAL or MESECAM signal is recorded in the LP mode, a black and white picture appears and the picture may be inferior in some case.

Frame advance

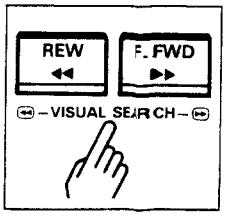
When you hold the F.ADV button on the remote control unit down during still playback mode, tape will be played back frame by frame. It operates only after the PAUSE button has been pressed.



Visual search

This allows you to view the picture from a recorded tape at high speed in both the forward and the reverse directions.

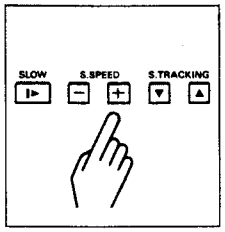
Press the PLAY button to play a tape, then press either the VISUAL SEARCH button REW or F.FWD. Pictures can be viewed at high speed in either the forward or the reverse direction.



Note:

- The playback picture will have some noise bar in the visual search mode.
- A black and white picture appears when playing a tape on which a PAL or MESECAM signal is recorded in the LP mode.
- If you see vertical shaking on the TV screen in the visual search mode, rotate the TRACKING control on the VTR to minimize shaking.

Slow function



Press the SLOW button on the remote control unit during playback, and the tape is played back at slow speed.
Then use the SLOW SPEED (S.SPEED) buttons on the remote control unit to vary the playback speed.

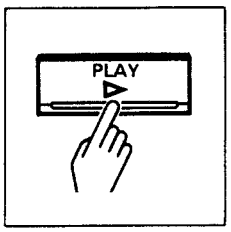
Notes:

- When noise appears in the slow playback pictures, it may be minimized by pressing the SLOW TRACKING (S.TRACKING) buttons on the remote control unit. Minimizing the noise in the slow playback, the noise at Still or Frame Advance can also be minimized at the same time.
- When the slow playback mode continues for about 5 minutes, the VTR switches to the play mode automatically.
- During slow operation, some noise appears on the screen and sound is muted. No colour picture appears from LP tapes of PAL/MESECAM.

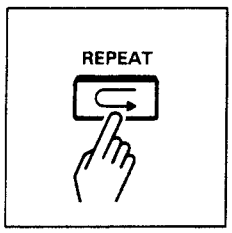
Repeat function

Use this function to repeat the scene you have just viewed during playback.

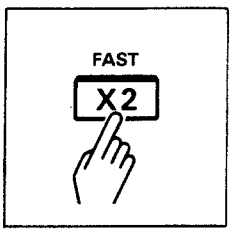
1 During playback, press PLAY button at the scene where you want the repeat of the playback to start. The playback continues.



2 Press the REPEAT button on the remote control unit. The VTR enters into the reverse search mode, then enters into the playback mode at the position where the PLAY button was pressed.



Fast playback



Press the FAST button on the remote control unit during playback of a tape. Pictures can be viewed 2 times faster than the normal speed in the forward direction. To release, press the PLAY or STOP button. The video deck will change to the mode corresponding to the button pressed.

Note:

- If you see noise on the TV screen in the fast playback mode, rotate the TRACKING control on the VTR to minimize noise.
- Sound is also played back 2 times faster than the normal speed.
- When playing a tape on which a PAL or MESECAM signal is recorded in the LP mode, a black and white picture appears and the picture may be inferior in some case.

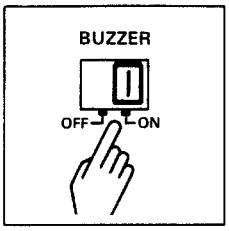
Automatic rewind

The VTR automatically rewinds the tape when the end of the tape is reached.

Rewind shut off

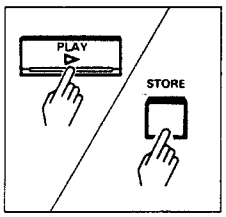
If the OPERATE switch is pressed during rewind operation, power will be turned off automatically after the tape has been completely rewound.
Note: If the counter memory function is turned on, the VTR will stop rewinding and switch off at the specified position.

Beep sound



This VTR has a BUZZER switch. When this switch is ON, a beep sound will be heard when any VTR operation button is pressed. This is a convenience in operation.
To stop the beep sound, set the switch to OFF.

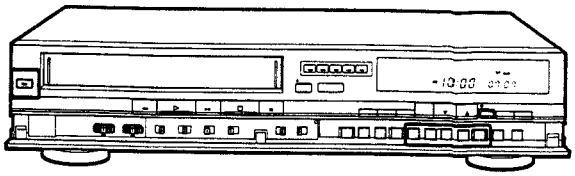
Auto endless play



Press the PLAY and the STORE buttons simultaneously; you can play the tape from the beginning to the end repeatedly. To stop endless play, press the EJECT or the POWER button.
Note: If the counter memory function is turned on, the VTR stops rewinding at "0000" then starts playback.

TIMER RECORDING

The programmable electronic clock/timer permits the unattended recording of 8 preselected programmes within a period of 1 year, including the same programme(s) repeated on every day and the same programme(s) every week. It turns the unit on and off and selects the channel automatically.



User's controls

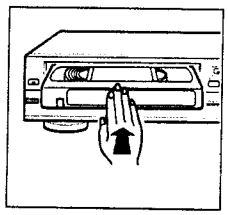
The timer can also be programmed with the remote control unit provided. See page 23 for more details on programming procedures with the remote control unit.

Preparations for timer recording

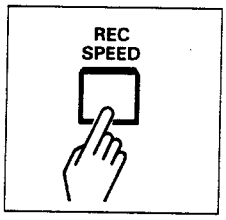
- Your TV does not have to be on to make a recording because the VTR records TV programmes without the aid of your TV. Its only use is for monitoring.

1 Make sure that the clock shows the present time and day correctly.

2 Insert a cassette.
Be sure to check that the record safety tab is not missing. If the record safety tab is missing, recording will not begin.



3 Select the speed.
It is recommended to set this switch to "SP" to obtain the best picture and sound.

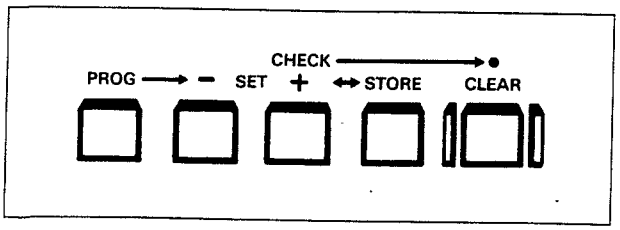


4 Programme the timer.

Programming the timer for unattended recording

For unattended recording the timer needs to know what **day** to make the recording, the **time to start**, the **time to stop**, and the **channel to be recorded**.

The buttons for programming the timer are in the secondary control door; PROGRAM, SET and STORE buttons. If you input erroneous information by mistake when programming the timer, press the CLEAR button and input the correct information again.

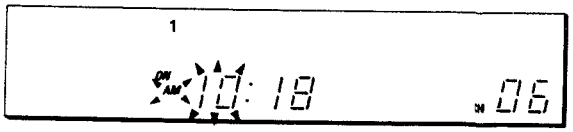


1 Press the PROGRAMME button.

An unused programme number is automatically selected from numbers 1 to 8 in numerical order and the channel number will start flashing.

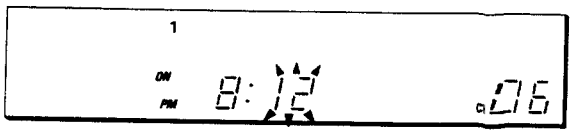
NOTE: Check the programme numbers in the display before pressing the PROGRAMME button. The timer allows up to 8 programmes to be stored, but when all programme numbers 1 to 8 are lit in the display, no programming can be performed. To input a programme at this time, clear one of the 8 programme numbers (see "To clear a programme"). When the PROGRAMME button is pressed while all the 8 programme numbers are lit, the "FUL" indicator will light to warn you. (When the BUZZER switch is ON in this state, a beep sound will be heard to warn you.)

2 Choose the channel to be recorded by pressing the SET or the CHANNEL select button. Then press the STORE button. Hour starts flashing.



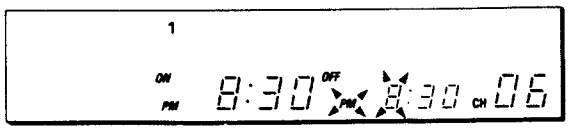
For example, the above diagram shows that channel 6 has been set.

3 Select the hour for recording to start by pressing the SET button (Forward or Reverse). Hold down the button to advance it rapidly.
Press the STORE button after selecting the hour for recording to start.
Minute starts flashing.



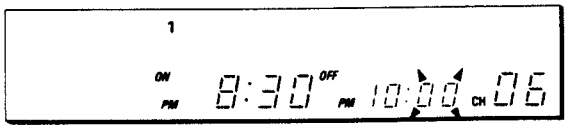
For example, the above diagram shows that "PM 8" hours has been set.

4 Select the minutes for recording to start by pressing the SET button (Forward or Reverse). Hold down the button to advance it rapidly. Press the STORE button after selecting the minute for recording to start.
"OFF" will appear and hour starts flashing.



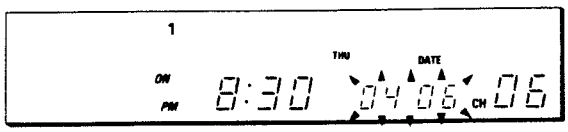
For example, the above diagram shows that "30" minutes has been set.

5 Select the hour and minute to stop recording by the same procedures described in steps 3 and 4.



For example, the above diagram shows that "PM 10:00" has been set.
Be sure to press the STORE button after selecting the minute. The current date appears and starts flashing.

6 Press the Forward SET (+) button to select the day and month of recording.

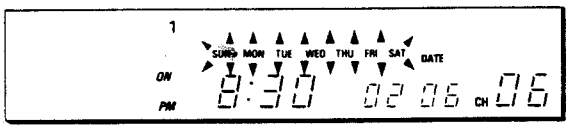


For example, the above diagram shows recording on the 4th of June.
Notes:
- Day of week appears automatically.
- If you want to start recording on the current day, simply press the STORE button.
- The above diagram shows how to record a programme on a single day. To record a programme at the same time on every day or to record it on one certain day of each week, follow the procedure described below.

After setting the day and month press the STORE button. The programme indicator flashes and the display shows both start and stop times in a few seconds. Then display shows start time and date. Finally the display returns to normal together with lighting programme number.

NOTES:
To record a programme at the same time every day of the week or to record a programme on a specified day at the same time each week, perform the following step instead of step 6 above.

To record at the same time every day of the week
Press the Reverse SET (—) button **once.** All day indicators light.
If you press the button twice or more, press the button until all day indicators light. Hold down the button to advance rapidly.



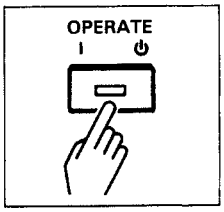
Then press the STORE button.

To record on a specified day at the same time each week
Press the Reverse SET (—) button until the desired day indicator lights along with letters "WKL". Hold down the button to advance it rapidly.

Then press the STORE button.

Now, one programme has been completed.

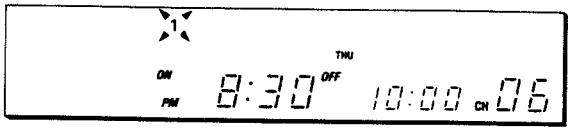
7 Turn off the OPERATE switch. The "⏲" indicator will come on.



Notes:
1. If the erase prevention tab is removed, the cassette is ejected automatically and "⏲" indicator will flash. Stick a piece of cellophane tape over the erase prevention hole on the cassette to enable recording.
2. The "⏲" indicator will flash, if a cassette is not inserted.

To clear a programme

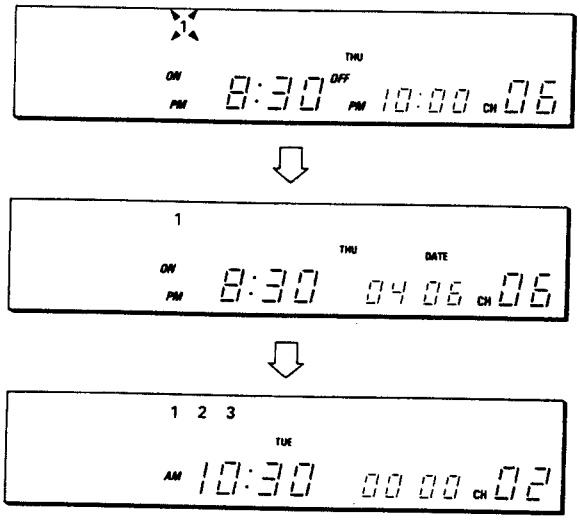
1 Press the Forward SET button (+) until a programme number (and start/stop times) to be cleared appears.



2 Press the CLEAR button.
The display returns to the clock time display and the cleared programme number disappears.
Be sure to press the CLEAR button while the display shows the start/stop times or the start time/start date. The programming does not clear if the CLEAR button is pressed after the display has returned to the clock time display.

To check programming

Press the Forward SET button (+).
The programme indicator "1" flashes. If the programme No. 1 has been already programmed, both start and stop times are displayed. After a few seconds the display shows the start time and the start date. The display then automatically returns to the present time of the day.
When the clock display reappears, press the Forward SET button (+) again to check the next programme.
If that programme number has not been used, only programme number will appear.



Programming errors

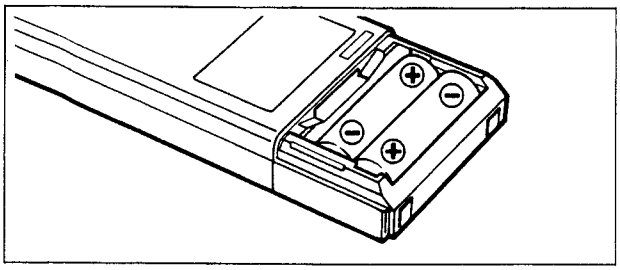
If programmes overlap, the VTR will select the programme with the earlier start time. When that programme is over, the VTR will switch to the next programme. If the start times are the same, the VTR will select the programmes in numerical order.

NOTE: If a power failure occurs, the programmed information will be maintained. However, if the power failure continues for 15 minutes or longer, the present time will be erased.

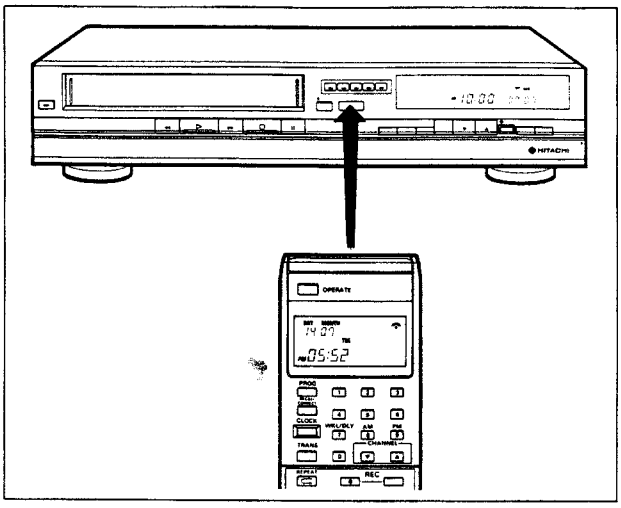
REMOTE OPERATION

You can operate the VTR from a distance using the Infrared Remote Control unit which performs the same functions as the corresponding buttons on the VTR.

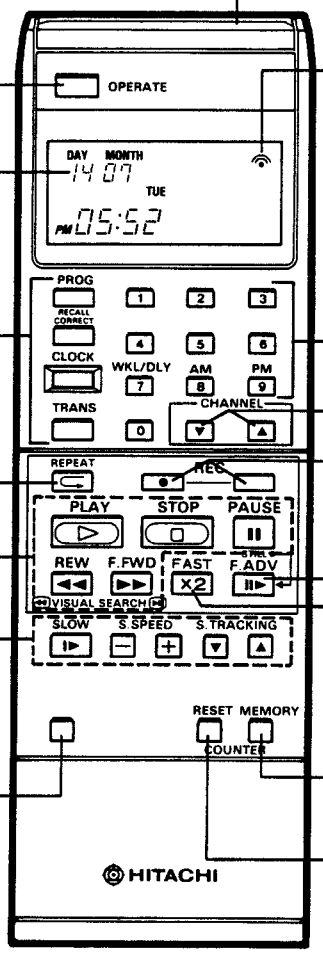
Power source of infrared remote control unit
The infrared remote control unit is powered by two batteries (size IEC standard R6). The life of the batteries is about a year although it depends on the number of times the unit is used. Replace the batteries when operation is not possible or when the distance becomes too small.



Operation of remote control
To use the infrared remote control unit aim it at the receiver on the front panel of the VTR.



Controls and function



TRANSMISSION WINDOW

OPERATE: Same as OPERATE on the VTR. (Turns operate on/off.)

TRANSMITTING INDICATOR: Will light when any button is pressed, and transmit commands from the remote control unit to the VTR.

CLOCK/TIME DISPLAY: While setting the clock/timer, this display will prompt you through the procedure. After setting the clock, **the display gives you a constant readout of the clock time.**

10-KEY BUTTON
- Press two numbers to select a channel.
- Also uses for setting the clock and programming the timer.

CLOCK/TIMER PROGRAMME BUTTONS: See next page for complete information.

CHANNEL: Same as CHANNEL on the VTR. (Select next higher or lower channel.)

REPEAT: For repeat function. See page 18 for details.

REC: Press both buttons to start recording.

PLAY/STOP/PAUSE/REW/F.FWD: Same as on the VTR.

F.ADV: Advance the picture from frame to frame during still playback. See page 17.

SLOW/S.SPEED/S.TRACKING: Used for slow motion play. (See page 18 for details.)

FAST: Used for fast playback. See page 18 for details.

This button is disable.

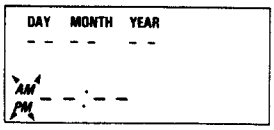
MEMORY: Same as MEMORY on the VTR. (Turns counter memory on/off.)

RESET: Same as RESET on the VTR. (Resets tape counter to 0000.)

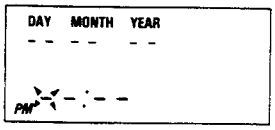
NOTE: The infrared rays will bounce off the walls and eventually reach the receiver on the VTR, but for best results, transmit rays directly to the receiver.

To set clock/calendar

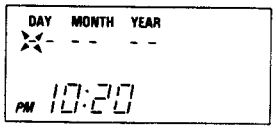
1 Press CLOCK.



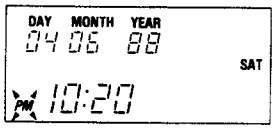
2 Select AM or PM.
Press [8] for AM or [9] for PM.



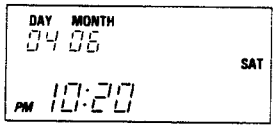
3 Set the time.
For example, press [1] [0] [2] [0] for 10:20.



4 Set the calendar.
For example, press [0] [4] [0] [6] [8] [8] for 4 of June, 1988.
The day of week appears automatically.



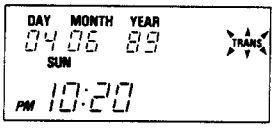
5 After setting the calendar, press CLOCK.
Year disappers from the display panel and the clock starts counting.



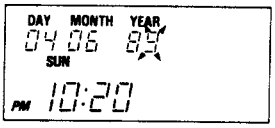
Note: If you don't press CLOCK and leave it for about one minute, the display changes to above one and clock starts counting.

To correct the clock/calendar after counting

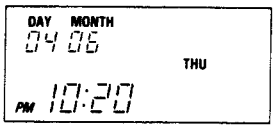
1 Press CLOCK.



2 Press RECALL/CORRECT repeatedly until the incorrect digit flashes.

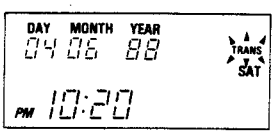


3 Press the correct digit of 10-key button.
Then press CLOCK.

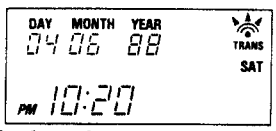


To transfer the clock/calendar to VTR

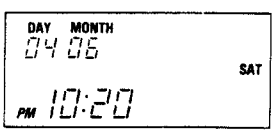
1 Press CLOCK.
The year appears along with the blinking "TRANS".



2 Press TRANS while aiming the remote control unit to the VTR.
The transferred clock/calendar appears on the display of VTR.

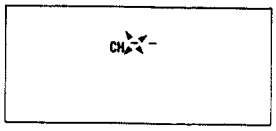


3 Press CLOCK to return the display panel of remote control unit to the normal display.

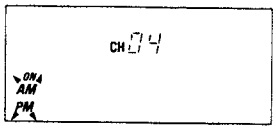


To programme the timer

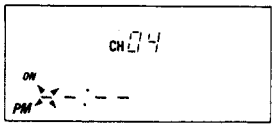
1 Press PROG.



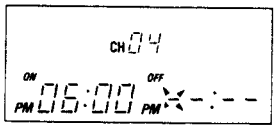
2 Set the channel to be recorded.
For example, press [0] [4] for channel 4.



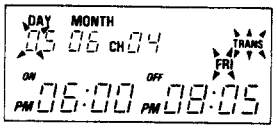
3 Select AM or PM.
Press [8] for AM or [9] for PM.



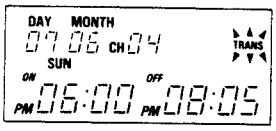
4 Select the start time.
For example, press [0] [6] [0] [0] for 6:00.



5 Select the stop time.
For example, press [0] [8] [0] [5] for 8:05.

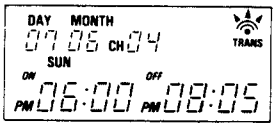


6 Select date for recording.
For example, press [0] [7] [0] [6] to begin recording on 7 of June.

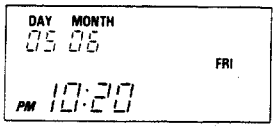


Note: If you want to start recording on the displayed date, skip to step 7.

7 After programming, press TRANS.
The programmed information is transferred to VTR and is displayed on the VTR display for a few seconds.



8 Press CLOCK to return the display panel on the remote control unit to the clock/calendar display.

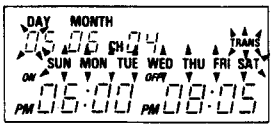


Note: If you don't press CLOCK and leave it for about 10 seconds, the display changes to the clock/calendar display.

9 To activate VTR's timer and make recording at preselect time, be sure to turn the system power off. Of cource, the cassette which has a safety tab intacted must be inserted.

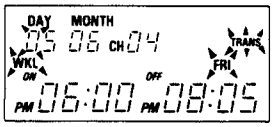
To record at same time every day of week

Press [7] WKL/DLY once after performing the step 5 (all days will appear), then follow steps 6 through 9 to select the first recording date.



To record on a specified day at the same time each week

Press [7] WKL/DLY repeatedly until the desired day of week you want to start recording appears after performing the step 5, then follow steps 6 through 9.



To check the programming in memory of remote control unit

Press RECALL/CORRECT button.
The programmed information is shown by the Display. After checking press CLOCK button once to return the display panel to the normal.
Note: When 2 or more programmes are stored in memory, only the last programmed information is displayed.

To check programming in memory of VTR

Press the TRANS button **when a normal display (clock/calendar) is shown** in the display panel of the remote control unit; the preset information will appear in the display of the VTR. Press the TRANS button repeatedly to check the required programme.

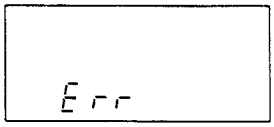
To change the programming information after transmitting

1. Press RECALL/CORRECT button to display the programmed information on the display.
2. Press RECALL/CORRECT button repeatedly until the digit to be corrected flashes.
3. Correct the error.
4. Press RECALL/CORRECT button until "TRANS" flashes.
5. Press TRANS button to transfer them to VTR.

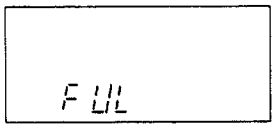
Note: The incorrect information that you transferred previously has been stored in the memory of the VTR as it is. Clear the programme using the controls on the VTR.

Operating notes

1. If you select a channel which is not preset (a channel which is not displayed if the channel select button on the VTR is pressed) in step 2, "Err" is displayed by the VTR when the TRANS button is pressed. In this case, correct the channel (see the method above) then transfer them to VTR.



2. Check the display on the VTR before transferring data.
If TRANS button is pressed when all the programme numbers that the VTR can store are occupied, a "FUL" indication will appear in the Display on the VTR and the information transferred will be rejected.

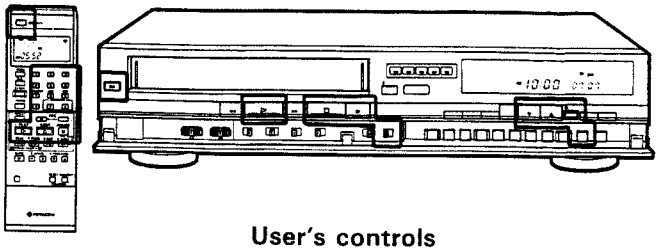


NOTE:
Before setting the clock/calendar and programming the timer, remember followings.

1. Insert two batteries (size IEC R6) in the battery compartment of remote control unit.
2. First set the clock/calendar, then timer if desired.
3. While you are setting/programming them, the display panel on the remote control unit will prompt you through the procedure.
4. Always press [0] **before** single-digit hour, minute, day, month, and year.
5. If you press a wrong digit during setting/programming them, press the RECALL/CORRECT button repeatedly until the incorrect digit flashes then enter the correct digit.
6. You have about one minute to do each step in the procedure. If you do not proceed to the next step, all entries are erased and you must start over.

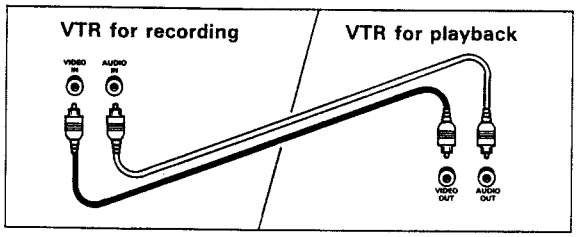
TAPE DUBBING

Hitachi Video cassette recorder allows you easy recording from another VTR by connecting AUDIO/VIDEO jacks located on the rear panel of the VTR. This connection permits easy tape reproduction.

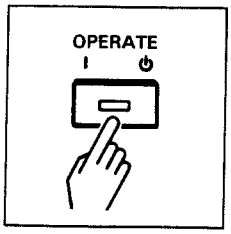


User's controls

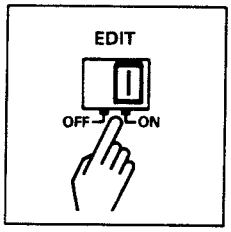
1 Connect a second VTR to this VTR.



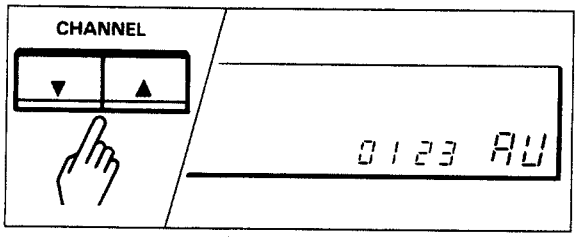
2 Switch both VTRs and TV on.



3 If you use this VTR for playback, set the EDIT switch to ON.

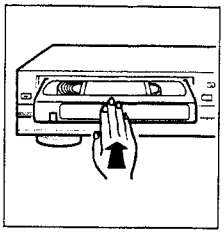


4 Press the CHANNEL select button to select AU (auxiliary input) position if using this VTR as a recorder.

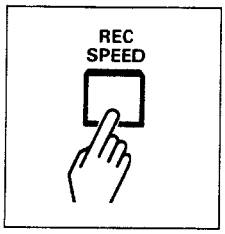


You can also select AU by inputting channel 91 with the remote control unit.

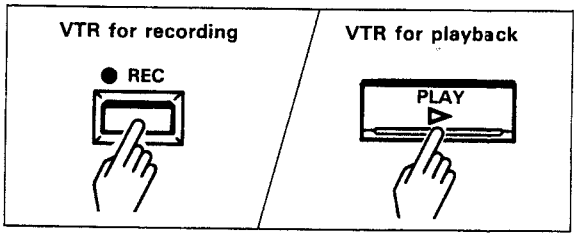
5 Insert a blank cassette into the VTR for recording, and the source cassette into the playback VTR.



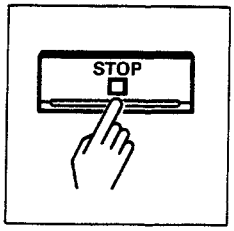
6 Select the recording speed. SP speed is recommended for better picture and sound.



7 Press the RECORD button on the recording VTR and the PLAY on the playback VTR.

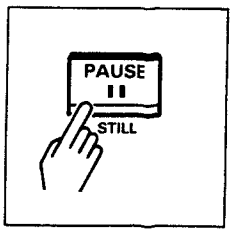


8 To end tape dubbing, press both STOP buttons.



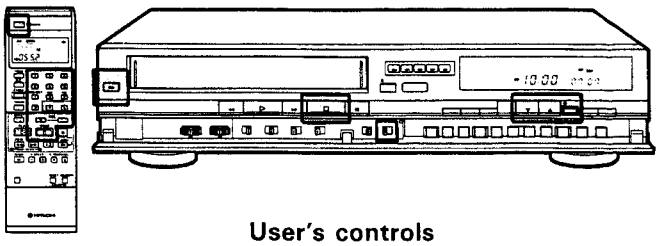
To edit out unwanted material

If you want to edit out unwanted material, press the PAUSE button at the appropriate time on the recording VTR while it is recording. Press the PAUSE again to resume recording.

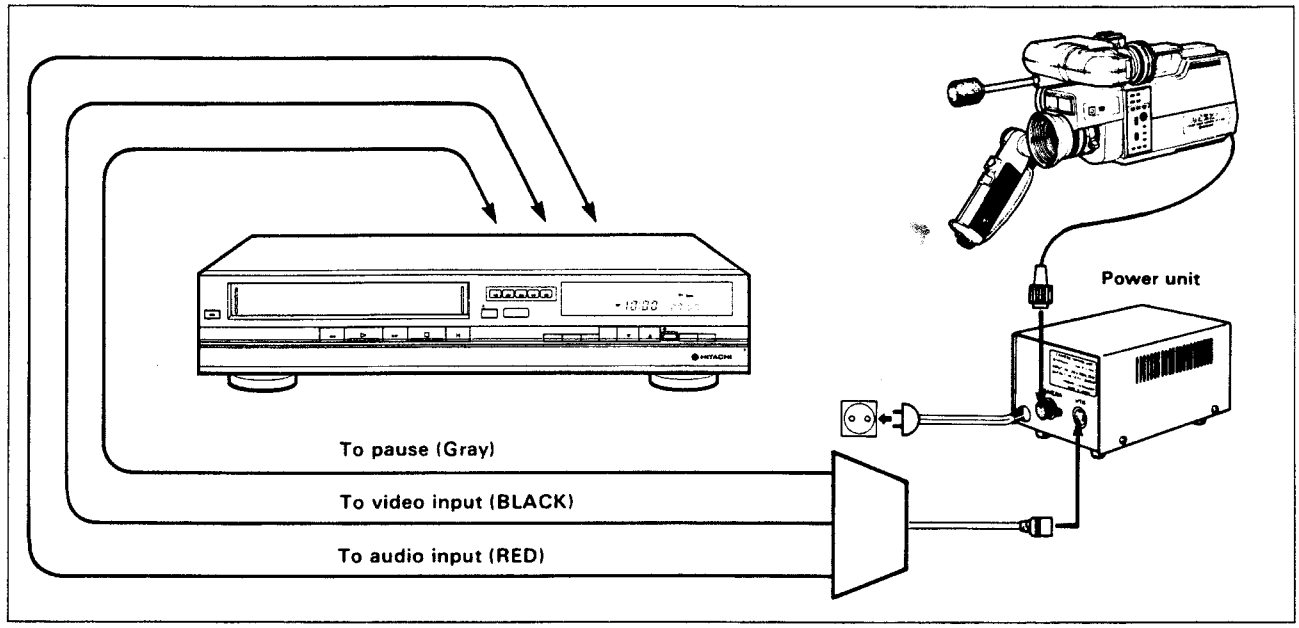


RECORDING WITH A VIDEO CAMERA

Refer to the instruction manual of the camera as well as these instructions.
You will need a video camera and power supply for the video camera.

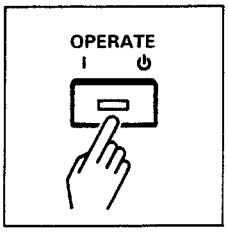


User's controls

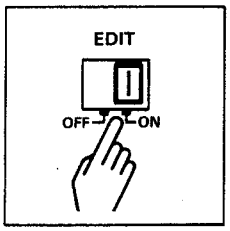


1 Connect the camera, power supply unit and VTR as shown in the above diagram. See each instruction manual for details.

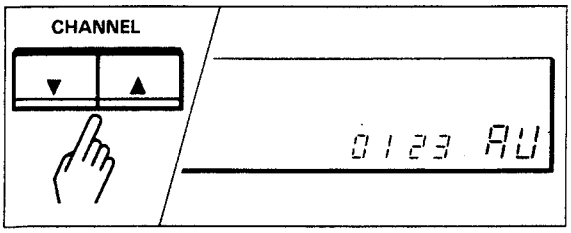
2 Turn on the OPERATE switches of the VTR and power supply unit.



3 Insert a cassette.



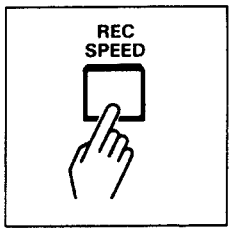
4 Press the CHANNEL select button so as to have "AU" indication light up on the display.



You can also select "AU" by inputting channel 91 with remote control unit.

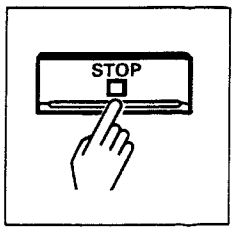
5 Adjust aperture, focus, etc. on camera.

6 Select tape speed.



7 Press the RECORD button to start recording. The Record Start/Stop button on the video camera can be used to stop recording between scenes.

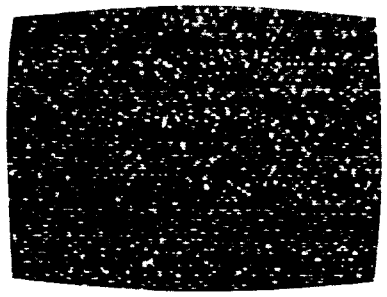
8 To stop recording, press the STOP button.



Note: The remote control button on a Hitachi Video Camera can be used to start and stop the video deck. It has priority over the PAUSE button of the video deck. When the remote control button on the camera is set to PAUSE, recording will not start when the PAUSE button of the video deck is pressed.
The camera remote control button must be released in this case.

MAINTENANCE

1. To maintain the optimum performance of this VTR, regular periodic maintenance is required. Your dealer will advise you further.
2. Maintenance and adjustments may not be carried out by the user. In all cases of difficulty or doubt, consult your dealer.
3. Head cleaning
   - Dirt accumulated on the video heads after a period of time may cause the playback picture to become blurred or part of the video information to be lost. This does not mean that the recorded programme has been erased but head cleaning is required which must be carried out by your dealer.
   - Under no circumstances we do recommend users to attempt to clean the video heads as this is done only effectively by removal of the top cover to gain access to the video heads and other parts which require cleaning, which would expose live conductors and present a "shock" hazard.
   - In regard to the various head cleaning tapes which are currently available on the market, these can cause damage and also reduce the operational life of the video heads if used incorrectly. Please consult your dealer as to the suitability of any cleaning aids before purchase.



PROBLEM GUIDE

PROBLEM	THINGS TO CHECK	SOLUTION
No power	• Is mains lead connected?	• Connect mains lead with AC outlet.
Timer recording is not possible.	• Is the recording time set correctly? • Is the OPERATE switch set to "OFF"? • Is the record safety tab missing?	• Set the recording time correctly. • Set the OPERATE switch to "OFF". • Place cellophane tape over missing safety tab.
Recording mode can't be engaged.	• Is the record safety tab missing?	• Place cellophane tape over missing safety tab.
Picture is poor in playback.	• Is the TV channel selector set to the proper channel? • Is the TV fine tuning set correctly?	• For playback, the TV channel selector should be set to channel. • Fine tune your TV.
Noise in picture in playback	• Are Video Heads clean?	• Head cleaning is necessary.
No picture in playback	• Is the TV set to the correct channel?	• Set to correct channel. (for your video channel)
Playback picture is partially noisy.	• Is the TRACKING control set to center position?	• Adjust TRACKING control for the best picture.
Off-the-air TV programme cannot be seen.	• Is connection correct?	• Connect correctly.

SPECIFICATIONS

Format:	VHS, PAL, NTSC & SECAM
Recording:	Rotary Two-Head Helical Scan Azimuth Recording
Tape Speed:	PAL/MESECAM: 23.39 mm/sec (SP), 11.7 mm/sec (LP) NTSC: 33.35 mm/sec (SP), 16.67 mm/sec (LP) (playback only), 11.12 mm/sec (EP) SECAM: 23.39 mm/sec
Tape Width:	12.7 mm
Operation Temperature:	5°C to 40°C
Video:	PAL, SECAM & MESECAM colour & CCIR monochrome signal 625 lines Standard (3.58 MHz) and modified (4.43 MHz) NTSC colour & EIA standard 525 lines
Recording Time:	480 min. (using Hitachi E-240 cassette) (PAL LP mode) 480 min. (using Hitachi T-160 cassette) (NTSC EP mode) 240 min. (using Hitachi E-240 cassette) (SECAM mode)
Antenna Input:	VHF: channels 2 — 12 (PAL mode), 1 — 13 (NTSC mode) CATV channels S1 — S20 (PAL mode), A-5 — A-2, A-8, A — V (NTSC mode) UHF: channels 21 — 69 (PAL mode), 14 — 78 (NTSC mode)
RF Output::	UHF channels 37 (30 — 39 adjustable) (System I, G&K) UHF channel 34 — 36 (25 — 38 adjustable) (NTSC)
Video Input:	0.5 to 1.5V p-o 75 ohm Unbalanced
Video Output:	1V p-p 75 ohm Unbalanced
Audio Input:	—8 dBS 50 kohm
Audio Output::	—8 dBS
Fast Forward/Rewind time:	About 7 minutes (with E-240 cassette)
Power:	AC 100—110V, 115—127V, 200—220V, 230—250V, 50/60 Hz
Power Consumption:	32W (Including timer)
Timer:	12-hour digital indication
Cabinet Size:	435 (W) x 92 (H) x 376 (D) mm
Weight:	7.1 kg
Accessories Included:	1 — Aerial cable 1 — Infrared remote control unit 1 — Mains plug adaptor 1 — Aerial plug adaptor 2 — Batteries

* Design and specifications are subject to change without notice.

CHANNEL RECEIVED

BAND	CHANNEL RECEIVED
L	PAL: VHF Low channels 2—4 (48.25—62.25 MHz) NTSC (Japan): VHF Low channels 1, 2 (91.25—97.25 MHz) NTSC (America): VHF Low channels 2—6, CATV channels A-5, A-4, A-8 (55.25—97.25 MHz)
H	PAL: VHF High channels 5—12, CATV channels S1—S20 (105.25—294.25 MHz) NTSC (Japan): VHF High channels 3—12 (103.25—217.25 MHz) NTSC (America): VHF High channels 7—13, CATV channels A-3—A-1, A—V (103.25—289.25 MHz)
U	PAL: UHF channels 21—69 (471.25—855.25 MHz) NTSC (Japan): UHF High channels 13—62 (471.25—765.25 MHz) NTSC (America): UHF High channels 14—78 (471.25—855.25 MHz)

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